

REMARKS

Claims 1, 14, 15, and 21 are amended. The amendments to claims 1, 14, and 15 are made for the purpose of clarifying limitations already present in the claims, and not for the purpose of distinguishing over the prior art. Claim 21 is amended to correct a typographical error related to dependency.

The Office Action fails to establish that claims 1, 4-19, and 21 are anticipated by the publication entitled, "FPGA Routing and Routability Estimation Via Boolean Satisfiability" by Wood et al. ("Wood"), under 35 USC §102(b). The rejection is respectfully traversed because the Office Action fails to show that all the limitations of the claims are identically taught by Wood.

For example, independent claims 1, 14, and 15 include limitations that relate to generating a first Boolean function with variables representing respective net/solution pairs. Each net has an associated set of one or more routing solutions, at least one of the nets has a plurality of routing solutions, and the first function evaluates to true if there exists a set of values for the variables such that at least one of the variables for each net is logically true. Generally, the Office Action fails to show that Wood teaches the limitations relating to a net having multiple solutions. The cited sections of Wood appear to deal with each net having a single routing. For example, Wood's Section II, first paragraph appears to discuss a single encoding per net to be routed. Furthermore, Wood's Fig. 3 and accompanying description (p. 224, beginning with the second full paragraph) shows and discusses a routing for each net being specified with a set of triples. There is no apparent reference to a net having multiple routing solutions. For at least these reasons, the Office Action fails to show that Wood anticipates claims 1, 14, and 15.

Claim 4 depends from claim 1. The Office Action fails to show that Wood anticipates claim 4 for at least the reasons set forth above in regards to claim 1.

Claim 5 depends from claim 1 and includes further limitations that relate to generating a net table that includes respective sets of solutions associated with the nets. Claim 16 includes similar limitations. The cited portion of Wood states that "each two-point connection has a connectivity constraint associated with it whose purpose is to ensure that the connection makes a contiguous path through the channel" (p. 225, col. 1, para. 2, ll. 2-5). This portion of Wood bears no apparent relevance to the limitations of claims 5 and 16. If the rejection is maintained, further explanation is respectfully requested. Otherwise, the rejection should be withdrawn.

Claims 6 and 7 depend from claim 5, and the Office Action fails to establish that Wood anticipates these claims for at least the reasons set forth above in regards to claim 5. In addition, claim 7 includes limitations that relate to generating a resource table including respective sets of net/solution pairs associated with the resources, wherein each net/solution pair associated with a resource represents usage of the resource by the net/solution pair. The cited section of Wood does not appear to mention a resource table, but instead teaches a Boolean function that returns a "1" for connected paths. This does not appear to relate to a table of used resources. Thus, the Office Action fails to establish that Wood anticipates claims 6 and 7.

Claim 8 depends from claim 7, and the Office Action fails to show that Wood anticipates claim 8 for at least the reasons set forth above in regards to claim 7.

Claims 9 and 10 depend from claim 1. The Office Action fails to show that Wood anticipates claims 9 and 10 for at least the reasons set forth above in regards to claim 1.

Claim 11 includes further limitations that relate to modifying the routing solutions if no feasible routing is found and then repeating the process. The cited portion of Wood

mentions fast incremental updates of the routability and perturbing a global route. However, there appears to be no relevant teaching relating to modifying the routing solutions where at least one of the nets has multiple routing solutions. Thus, the Office Action fails to establish that Wood anticipates claim 11.

Claim 12 depends from claim 11, and claim 13 depends from claim 12. The Office Action fails to show that Wood anticipates claims 12 and 13 for reasons similar to those set forth above in regards to claim 11.

Claim 17 includes limitations that further limit the limitations relating to the resource table. As explained above, Wood does not teach the limitations that relate to the resource table. Therefore, the Office Action fails to show that Wood anticipates claim 17.

Claim 18 includes limitations similar to those of claim 7. Thus, the Office Action fails to establish that Wood anticipates claim 18 for at least the reasons set forth above in regards to claim 7.

Claim 19 includes limitations that relate to generating the exclusivity functions from the resource table. As explained above, since Wood does not teach the limitations that relate to the resource table, the Office Action fails to show that Wood teaches generating the exclusivity functions from the table. Thus, the Office Action fails to show that Wood anticipates claim 19.

Claim 21, as amended, depends from claim 15. The Office Action fails to show that Wood anticipates claim 21 for at least the reasons set forth above.

The Office Action fails to establish that claims 2-3 and 20 are unpatentable under 35 USC §103(a) over US patent number 6,442,732 to Abramovici et al. ("Abramovici"). The rejection is respectfully traversed because *prima facie* obviousness is not established. The limitations of the claims are not shown to be suggested or motivated by Abramovici, and the alleged

motivations for modifying Abramovici are improper. Furthermore, the rejection fails to show a reasonable expectation that Abramovici could be successfully modified (MPEP 2143).

The Office Action cites certain portions of Abramovici as suggesting the limitations of dependent claims 2-3 and 20, but fails to cite any portions of Abramovici that teach the limitations of the base claims 1 and 15. Having based the §103 rejection on the single Abramovici reference, the rejection is required to show that Abramovici suggests all the limitations of the base and dependent claims 2-3 and 20. The rejection is, therefore, improper because the Office Action fails to show that Abramovici suggests the all limitations of the base and intervening claims.

Based on the language of the Office Action, it appears that the Examiner intended to cite Abramovici in combination with Wood in making out the rejection under 35 USC §103(a). Even assuming *arguendo* that this was in fact the Examiner's intent, the rejection still fails to establish a *prima facie* case of obviousness. The alleged motivation is conclusory and simply repeats a use of conjunctive normal form (CNF). For example, the motivation states that using CNF "would have allowed a reconfigurable hardware platform to process circuits much larger than the available capacity of the platform at the cost of a limited amount of additional processing time." This alleged motivation provides no evidence in support of the idea that reconfigurable hardware platforms are limited in the size of circuits that can be processed, or evidence in support of the idea that CNF would somehow increase the available capacity. Furthermore, the relevance of processing by reconfigurable platforms to the claim limitations is unclear.

The Office Action also fails to provide any evidence to show that Abramovici could be successfully modified to achieve the present invention. Having failed to show teachings or suggestions of all the limitations of the claims, provide a

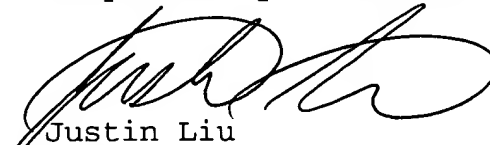
proper motivation for modifying Abramovici, and provide evidence of a reasonable expectation of successfully modifying Abramovici, the Office Action fails to establish a *prima facie* case of obviousness of claims 2-3 and 20 over Abramovici.

The Office Action fails to establish that Wood anticipates claims 1, 4-19, and 21, and fails to show that claims 2-3 and 20 are obvious in view of Abramovici. Therefore, the rejections of the claims should be withdrawn.

CONCLUSION

Reconsideration and a notice of allowance are respectfully requested in view of the amended claims and Remarks presented above. If the Examiner has any questions or concerns, a telephone call to the undersigned is invited.

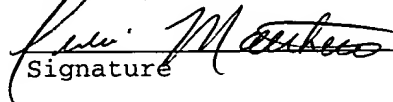
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Julie Matthews
Name


Signature